

III. Remarks

Reconsideration of this application is respectfully requested in light of the following remarks, which are responsive to the examination of claims 2-6 and 18-23.

A. Rejections under 35 U.S.C. § 112, paragraph 1 – Scope of Enablement

Claims 2-6 and 18-23 were rejected under the first paragraph of 35 U.S.C. § 112 for allegedly failing to “provide any guidance or working examples of methods using PEMF comprising the pulse and frequencies claimed.” Contrary to this assertion, the specification provides such guidance at the following references:

At page 10, lines 26-27, the specification teaches an example pulse frequency (rate of fluctuation) of approximately 3831Hz; and at page 11, lines 12-13, the specification teaches use of a pulse frequency of approximately 3861Hz. These teachings are consistent with the recited limitations in claims 4 and 18: “*wherein the rate of fluctuation is about 3800 Hertz to 3900 Hertz.*”

At page 10, lines 31-32, the specification teaches an example burst period of approximately 26 msec, as recited in claims 4 and 23.

At page 11, lines 17-18, the specification teaches an example burst period of approximately 5.5 msec, as recited in claims 4 and 23.

At page 10, lines 4-5, the specification teaches an example pulse frequency of approximately 62.5 KHz, which is consistent with the recited limitation in claim 23, “*wherein the rate of fluctuation is about 62 kHz to 63 kHz.*”

Applicant has provided specific references to address the Office Action’s section 112, first paragraph scope of enablement rejections. It is to be appreciated that a person of ordinary skill in the art, in following the teachings of the present disclosure, would not require undue experimentation to practice the claimed invention. Thus, reconsideration and withdrawal of this rejection of claims 2-6 and 18-23 is respectfully requested.

B. Rejections under 35 U.S.C. § 112, paragraph 1 – New Matter

Claims 2-6 and 18-23 were rejected under the first paragraph of 35 U.S.C. §112 for allegedly failing to comply with the written description requirement because the exact values and ranges recited in the claims could not be found in the specification. As noted above, Applicant has provided specific references to portions of the specification that support the amendments. Applicant has not added any new matter, so reconsideration and withdrawal of this rejection of claims 2-6 and 18-23 is respectfully requested.

C. Rejections under 35 U.S.C. § 112, paragraph 2 – Indefiniteness

Claims 6 and 22 were rejected under the second paragraph of 35 U.S.C. §112 for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action states that "Applicant has not defined 'substantially similar' or the entire limitation 'substantially similar to cell growth that occurs when a VEGF receptor is activated by a VEGF ligand.'" Office Action at 3.

Applicant respectfully asserts that the meaning of the term "substantially similar" in the context of claims 6 and 22 should be apparent to a person of ordinary skill in the art by observing the teachings of the specification. For example, the detailed description describes several instances of cell growth that occur when a VEGF receptor is activated by a VEGF ligand. *See e.g.*, description of FIGURE 4 at page 8. Additionally, the description with respect to FIGURE 3 illustrates an example use of an electromagnetic field to induce cell receptor activity. Accordingly, one of ordinary skill in the art would appreciate that the cell growth caused by the electromagnetic field may be substantially similar to cell growth that occurs when a VEGF receptor is activated by a VEGF ligand.

Additionally, claim 6 is dependent on independent claim 4 and claim 22 is dependent on independent claim 18. The metes and bounds of independent claims 4 and 18 are sufficiently defined. Since claims 6 and 22 depend from claims 4 and 18 respectively, and they further limit claims 4 and 18, Applicant believes they are sufficiently definite. Accordingly, reconsideration and withdrawal of this rejection of dependent claims 6 and 22 is respectfully requested.

D. Rejections under 35 U.S.C. § 103

The present Office Action rejects claims 18-22 under 35 U.S.C. § 103(a) over Yen-Patton (Yen-Patton et al., *Endothelial Cell Response to Pulsed Electromagnetic Fields: Stimulation of Growth Rate and Angiogenesis In Vitro*, 134 J. Cell. Physiol. 37 (1988)). Applicant respectfully disagrees with the grounds for rejection because Yen-Patton does not render obvious the invention as claimed.

The Office Action asserts that "Yen-Patton teach a frequency range of 15-4000 Hz, which encompasses the range of the present invention." Yet, the Office Action concedes that "Yen-Patton do not teach a specific frequency of 3800-3900 Hz." Office Action at 4. Despite this concession, with which Applicant agrees, the Office Action then alleges that "it would have been obvious to the artisan to establish an ideal frequency range in order to maximize the effect of PEMF on endothelial and bone cells."

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ.2d 1596 (Fed. Cir. 1988). In this case, the Yen-Patton reference itself fails to teach or suggest a method for activating a vascular endothelial growth factor (VEGF) receptor of one or more cells, as recited in the claims, let alone a rate of fluctuation between about 3800 Hertz to 3900 Hertz. In fact, the cited Yen-Patton reference states that Liboff et al. discovered "*DNA synthesis* was increased in cells exposed to sinusoidal time-varying electromagnetic fields varying in magnetic intensity from 0.02 to 4G and 15 to 4,000 Hz." Yen-Patton at 45 (emphasis added).

In this instance, the only motivation cited by the Office Action for suggesting the feature where "the rate of fluctuation is about 3800 Hertz to 3900 Hertz" is a general assertion that "it would have been obvious to the artisan to establish an ideal frequency range in order to maximize the effect of PEMF on endothelial and bone cells." [See, Page 4 of the Office Action]. This is insufficient, as a matter of law, to support a prima facie case of obviousness rejection.

The alleged motivation apparently revolves around the idea that *DNA synthesis* was increased in cells exposed to sinusoidal time-varying electromagnetic fields varying in magnetic intensity from 0.02 to 4G and 15 to 4,000 Hz. However, the mere fact that Yen-Patton can be modified does not render the resultant modification obvious unless Yen-Patton also suggests the desirability of such modification or combination. See *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). Herein, the modification of Yen-Patton does not suggest any desirability to employ a rate of fluctuation of about 3800 Hertz to 3900 Hertz to activate a VEGF receptor of one or more cells. In fact, the proposed modification of Yen-Patton would radically change the principle of DNA synthesis described therein, which is impermissible to render the claims prima facie obvious. See *In re Ratti*, 123 USPQ 349 (CCPA 1959).

Applicant further disagrees with the rejection because the alleged motivation for making the modification stems from the *result* of the modification. Since the *result* of the modification did not exist in the art at the time of applicant's invention, the result cannot, as a matter of law, form the motivation for the modification. This would constitute hindsight reconstruction which is impermissible in support of a prima facie case of obviousness.

In light of the foregoing, Applicant respectfully requests that this outstanding §103(a) rejection be withdrawn.


E. Conclusion

Applicant appreciates the withdrawal of the 102 rejections. For those reasons, and the reasons cited above, it is believed that all of pending claims 2-6 and 18-23 of the present application patently distinguish over the cited references and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned. No fees are believed due. However, in the event that any additional fees are required to complete this filing, the Commissioner is authorized to deduct any deficiencies from Deposit Account 13-0480, Attorney Docket No. 24179785-10022US-2.

If Examiner has any questions regarding this filing or the application in general, Examiner is invited to contact Applicant's attorney at the below-listed telephone number.

Respectfully submitted,

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